

Review on the Nutraceutical Values of *Borassus flabelifer* Linn.

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ABSTRACT

Background: *Borassus flabelifer* has a lot of nutritive and nutraceutical values to enhance human life, as like medicine, food and it provides a lot of employment opportunities to rural peoples in various dimension.

Area covered: *B. flabelifer* have a high nutritive source which contains carbohydrates, protein, crude fiber, ash, iron, fat, strontium, copper, manganese, zinc, aluminum, arsenic, lead and nickel, calcium, phosphorus, thiamin, riboflavin, niacin and Vitamin C, etc., present in various parts of the plant.

Expert opinion: *Borassus flabelifer* plant different parts have various medicinal properties like anti-microbial, antioxidant, anti-inflammatory, etc. In these views this review focuses on the nutritive and nutraceutical values of *B. flabelifer* (Linn) plant sources.

Keywords: *Borassus flabelifer*, Palmyrah palm, Toddy, Nutraceutical, Medicine

INTRODUCTION

Plants are completely covered in human life for food, shelter, clothes, etc. The sophisticated life gifted by plants to humans, especially nutritive and nutraceutical role in humans. In this view, this review article is focused on the nutritive and nutraceutical values of *Borassus flabelifer* (Linn) tree. The *B. flabelifer* is commonly known as Palmyra palm, native in Indian subcontinent and Southeast Asia. *B. flabelifer* is monocot plant belongs to the family "Arecaceae". *B. flabelifer* has lot of nutritive and nutraceutical values to enhance the human life, as like medicine, food and other by-products like the mat, hat, building materials, etc. Also, the palm tree to give lot of employment opportunities to rural peoples work on palm-based products like weaving mat, hat, fan, basket and other household products from palm leaf, toddy extracted from inflorescence of the palm tree, jaggery and other by-products produced from palm juice, germinated seed jelly, sprouts, palm jelly, fruit, etc., having much attention and the high market value based on those medicinal potential.

NUTRITIONAL VALUES OF *Borassus flabelifer*

The nutritional values of sprouts (Odiyal) reported by Atchley [1], Morton [2] and Chayanika et al. [3]. The dry sprouts contain carbohydrates, protein, crude fiber, ash, iron, fat, strontium, copper, manganese, zinc, aluminum, arsenic,

lead and nickel (**Figure 1**). The nutritional values of Palmyra young fruit contains protein, fat, carbohydrate, fiber, calcium, phosphorus, iron, thiamin, riboflavin, niacin and Vitamin C represented in **Figure 2** [4].

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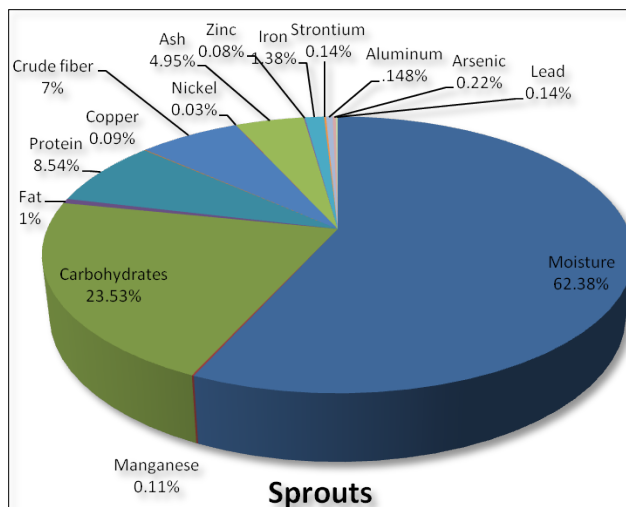


Figure 1. The nutritional values of sprouts (Odiyal).

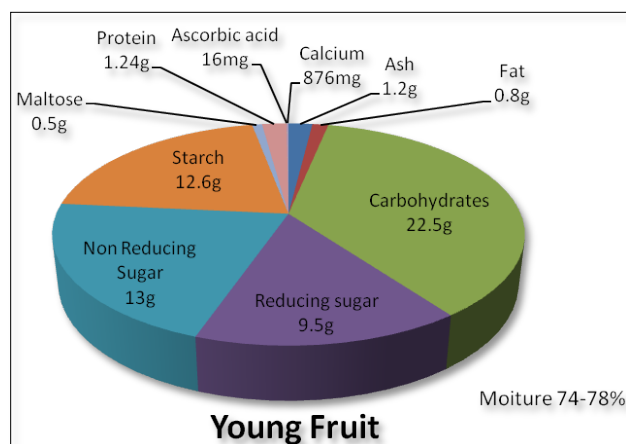


Figure 2. The nutritional values of Palmyra young fruit.

The fresh palm juice is a sweet, clear, colorless juice containing sucrose, reducing sugars (glucose, fructose, maltose and raffinose), protein and fat (**Figure 3**) [5,6].

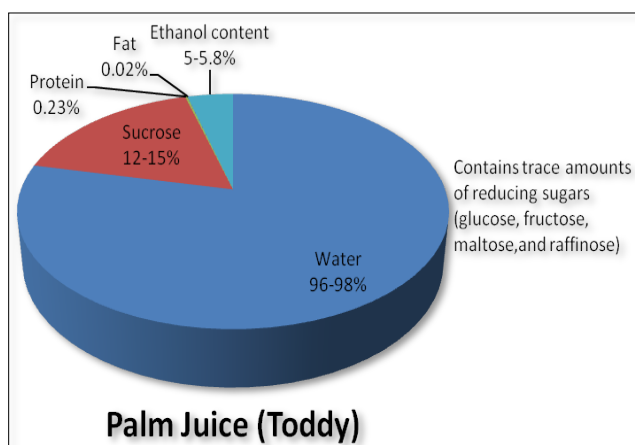


Figure 3. The nutritional values of fresh palm juice.

Half of the total sugars are fermented during the first 24 h and the ethanol content of the fermented palm sap reaches a maximum of 5.0-5.28% (v/v) after 48 h. Morton [2] reported

the nutritional contents of palm jaggery contain sucrose, iron, glucose, protein, fat, phosphorus, calcium, total minerals and copper (**Figure 4**).

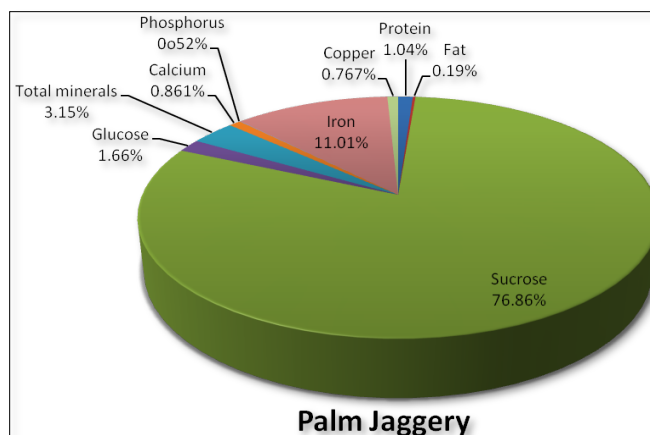


Figure 4. The nutritional contents of palm jaggery.

Nutraceutical values

Borassus flabelifer leaf extract have good inhibitory activity against different bacterial pathogens and it contains various phytochemicals responsible for good antioxidants reported by Jamkhande et al. [7]. The Paschapur et al. [8] studied the anti-inflammatory activity of male inflorescence obtained from *Borassus flabelifer* tree in the year of 2009. The fruits of the *Borassus flabelifer* (Palmyra) are used various properties in example it's used against helminthic, diuretic, antioxidant [9], enhanced antibacterial activity, wound healer, immune modulator, against inflammation, nausea and vomiting. It is also used to keep the body hydration, used to

relief the digestive problems and other stomach problem, laxative [10]. It prevents the malnutrition also.

The sprouts are used as laxative reported by Shirisha et al. [11]. The roots of the *Borassus flabelifer* are cooling and used as diuretic and anti-helminthic activity. The stem extracts contains bitter taste and it is used as mouth wash. Dennis et al. [12] reported *Borassus flabelifer* spadix used to relieve heat burn and use to enlarge the spleen and liver. The spadix (flower) involved in diuretic agent, stimulant laxative, anti-phlegmatic, liver disorder and analgesic activity [11] and also used against inflammation (**Figure 5**) [8].

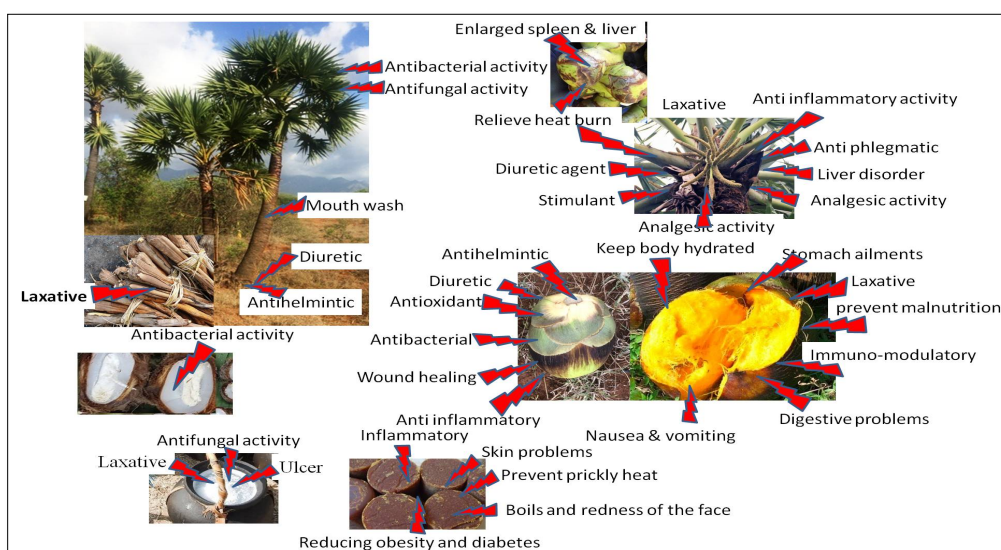


Figure 5: Nutraceutical values of *Borassus flabellifer* L.

The product of Palmyra sap (toddy) obtained by tapping the inflorescence tip. This toddy had high nutrients with antifungal property [13] it is also used as ulcer [14] and

laxative. The byproducts of palm sugar against inflammation, skin problems, prevent prickly heat, boils and

redness of the face. It is used as reducing obesity and diabetes [15].

CONCLUSION

Borassus flabelifer is an official tree of Tamil Nadu and it has a lot of nutritive and nutraceutical values which are well studied and reported by many researchers. Another side, poor knowledge and exposure many people destroy the Palmyra tree for used in bricks industries as firewood. Due to the significant medicinal values of Palmyra tree, it is used in folk medicine to cure many diseases and enhance human life. As like medicine, *Borassus flabelifer* is a rich source of bioceutical and it exhibits many biological properties and also used as a remedy of many diseases, disease treatment. Most of the parts of palmyra trees are used as a food and medicine. Further, it is known various applications and it provides self-reliant lifestyle and employment opportunity in rural people. In this view, the *Borassus flabelifer* tree is one of the most protectable one. The Governments has to stop the Palmyra tree cutting by legislation and promote research and development on *Borassus flabelifer* towards sustainable development. There are many challenges to Researchers, regarding the development of many value-added products from palmyra palm towards attaining sustainable development. Further, researchers need to develop a new micropropagation technique which is essential for culturing the *Borassus flabelifer* tree.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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